



## Impact Statement

**Project Title:** Development of Cloud Computing Capabilities for Research in the College of Agriculture, Food and Environmental Sciences at the California Polytechnic State University

**Issue:**

California Polytechnic State University (Cal Poly) has made a strategic decision to move to a cloud-based computing environment in order to leap-frog its current computing technology-base. This strategy has opened up tremendous potential for the University to take a technological jump in how research can be conducted on campus in terms of efficiently conducting analysis on big data issues and high-end computing oriented problems. The real advantage of cloud-based computing is that it allows for researchers to acquire the computing resources they need and only pay for the resources that they use. It can be quickly scaled to the size of the project.

The College of Agriculture, Food and Environmental Sciences (CAFES) has a group of faculty that are pivoting their research agendas to focus on big data analytics to examine and develop creative solutions to current and future issues in agriculture, food, and the environment. These include drone usage in agriculture, imagery analysis of hyperspectral data, and robotic usage in agriculture. To be able to conduct this research, the College needs to have access to servers that can store large data sets and have the capability to do high-end computational analysis. Under the current computing business model, the researchers in this arena would need to purchase several costly servers to conduct this research and the university would need to allocate space to these hardware.

To effectively utilize cloud-based computing in the College, there is a need for a new business model along with a set of appropriate policies and procedures to be developed. While this project was initially conceived to be focused on the College, it has morphed into being a university-level project.

**What has been done:**

A committee was developed that brought together faculty, ITS staff, and administrators to start to investigate how cloud computing can be offered as a service to faculty for their research needs. A couple of use case scenarios were identified and discussed. This committee has focused on developing a survey instrument to gauge the demand for cloud computing services. It has also started working on an outreach and communication plan to help inform members of the university community regarding what can be done with cloud computing resources.

**Impacts/New Partnerships:**

This project has opened up new relationships with the central ITS staff and College-level ITS groups in terms of working together to facilitate cloud computing on campus. Discussions are occurring between these two groups to better understand what type of support models make sense for assisting faculty with using this new resource. Training needs for College IT staff have been identified. ITS staff have been partnered with specific faculty to facilitate cloud computing technology in the faculty's research. One project has brought the cloud to the classroom.

### **Outcome of Project (societal impact/ measure of increased quality of life)**

There are three major outcomes that have occurred for this project. First, a new campus level committee was developed to bring together important stakeholders. This committee reports to our campus Faculty Advisory Committee on Technology, which in turn reports to the Chief Information Officer. This committee has identified a group of first adopters that could help facilitate communicating the benefits of the new technology. These stories have sparked the interest of other faculty to begin to adopt the technology in their research and teaching.

Second, ITS staff members were able to identify pockets of cloud computing that were already occurring, which opened up new bridges of communication between ITS staff and faculty researchers. This has allowed the ITS staff to save valuable time because they did not have to reinvent certain processes and were able to learn from individuals who had more experience with managing the technology.

Third, a survey instrument was developed and implemented to solicit what the current demand is for cloud computing services in terms of faculty research. While this survey was primarily meant to collect information, it was also used as a communication tool to help faculty understand what the new technology could do.

A wonderful outcome that occurred due to this project was when a faculty member lost her analysis of fMRI data due to a theft of her computer. The analysis work she did took her over a month to complete originally and was too large to be backed-up. This project helped facilitate her meeting with the ITS cloud implementation team who were able to recreate all of her analysis in under two days using cloud technology. Not only does the researcher have her analysis back, she now also has a much more efficient solution to her data analysis issues.

### **How has your project been aided by your FSLI experience?**

With any technology change there can be reluctance for individuals to adopt new solutions. One aspect of FSLI that has been extremely helpful to me is the development of how to take a leadership role in facilitating change. It has taught me important skills for developing a diverse team that can provide multiple perspectives. While this project was initially conceived as a College-level project, it became increasingly clear that it needed a much broader representation to be successful. Finally, FSLI has taught me the importance of delegation when you are in a leadership role. Prior to participating in the program, I had a tendency of being more of a manager than a leader. With this project, I have attempted to provide more of a vision to how cloud computing can be implemented at our university.

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